

Apogee Designs, Ltd.

Original Design Manufacturers

- Design
- Develop
- Prototype
- Produce



A **pogee Designs, Ltd.** is capable and ready to undertake product development and production challenges in a structured milestone driven format. Our strategic goal is to develop, produce and support your core, mission critical products. Apogee does not undertake contracts solely to deliver a pack of drawings leaving you to source production. We stand ready and capable to provide initial or long term production.

To achieve this, Apogee has invested heavily in the most modern computer driven production equipment available to our industry. Apogee professionals take pride in the services they provide and the products they produce. We employ the optimal material and process for the job at hand to yield the performance required by a competitive marketplace.

Apogee subscribes to a quality assurance program designed to satisfy the specific needs of a customer's industry. Our project management group is available throughout every phase of production including:

- ~ Concept development
- ~ Industrial design including artists renditions, marketing prototypes and models
- ~ Complete mechanical design engineering
- ~ Graphics development
- ~ Packaging development
- ~ Production planning with products released on a JIT basis over the term of the production contract
- ~ Contract manufacturing and component integration
- ~ Technical support and service of products after delivery

SERVICES

Please check our website (www.apogeedesigns.com)

- ~ Design Engineering
 - } **Product Design** and development including **Industrial Design**
 - } **CAD Based Engineering** using **SolidWorks 2004™**, **AUTOCAD 14™**, and **KEYCREATOR™** software. Capabilities include transfer and translation of almost all file formats. All files are kept on disk along with a 'shadow' disk and further backed-up daily via DVD. The disk is stored off site.
 - } **Document Control** with multi-level ECR-ECO procedures
- ~ **Prototype Development**
- ~ **Production Engineering**
 - } **CAM** Programming of all CNC equipment via **AccuTools™** and **SurfCam™**.
 - } Authorized Repair Facility (of Apogee produced units)
- ~ Warehousing and *ship-to-stock* or *ship-to-user* product management
- ~ Sub Contractor Management and integration for multi-component assemblies
 - } Purchasing and inventory control of all product components--from product to packaging
 - } **Great Plains Dynamics™** and **MicroMAX™** MRP production management software

PRODUCTION

Processes:

- ~ **Pressure forming** (pressure (>15 psi) on one side, vacuum on the other)
- ~ **Vacuum forming** (ambient pressure (15 psi) on one side, vacuum on the other)
- ~ **Thermoforming** (heat bending) of plastics
- ~ **Extrusion** manufacture of plastic profiles with an emphasis on the application of high strength tapes and secondary operations through our QS-9000 registered **ProEx** division
- ~ **Precision machining**
- ~ **Laser cutting**
- ~ **Fabrication** of plastics and light metals
- ~ **Plastic assembly**, solvent bonding, adhesive bonding, ultrasonic welding, UV cured adhesives
- ~ **Mechanical systems** assembly and testing
- ~ **Electronic and electromechanical** assembly (to board level) and testing
- ~ **Casting** of polyurethane, epoxy and silicone
- ~ **Ultrasonic insertion** of threaded inserts, components and staking of plastics
- ~ **Silk screening, Pad Printing and Painting**

PRODUCTION EQUIPMENT

Formers:

- ~ Three station **ZIMCO ZRM 5.9** computer controlled rotary former that can accept sheets up to 60" x 108" in size. This machine is equipped for pressure forming and twin sheet forming. It has AC servo rack and pinion platen drives for smooth platen movement and gas fired ovens for even temperature heating and numerous sensing options for accurate sheet forming.
- ~ Three station **MAAC** computer controlled rotary former with rack and pinion platen drives for smooth platen movement to reduce mark off. It can accept sheets up to 38" x 51" in size.
- ~ Single station **Kostur** 44" x 60" former with rack and pinion platen drives; this unit has gas fired ovens for even temperature heating and numerous sensing options for accurate sheet forming.
- ~ **PVI** 60" x 84" sheet size computer controlled shuttle former (1 oven, 2 platens)

CNC Equipment:

- ~ 1 **Anderson** (5' x 10' x 6") CNC router with 8 position tool changer and 11 addressable drills
- ~ 2 **Motionmaster SB-55XT** *twin* table (5' x 5' x 4' each or 5' x 10' ganged operation) 5 axis routers
- ~ 2 **Motionmaster SB-84X** *single* table (4' x 8' x 4') 5 axis routers
- ~ 1 **Motionmaster SB-64X** *single* table (4' x 6' x 4') 3 axis machine equipped with a **Coherent G-100** Diamond Series CO2 laser with **Kentronix LK-1000** control
- ~ 1 **Epilog Mini** 35 watt CO2, 12" x 20" laser engraver and cutter
- ~ 2 **Shinks** 4 head simultaneous, 2 drill, 3 axis CNC routers (the active cutting area is 39" x 80" x 6")
- ~ 1 **FADAL VMC-4020** 40" x 20" CNC machining center with 20 tool capability
- ~ 1 **FADAL VMC-15XT** 30" x 16" CNC machining center with 20 tool capability
- ~ 1 **Clausing/Kondia** CNC knee type milling machine with **Dynapath 20** control
- ~ 1 **Clausing Colchester Storm** CNC Turning center with **Fanuc** control



Machinery:

- ~ 1 49" table **Chevalier** (Bridgeport type) manual mill with **Sony Magnescale DRO**
- ~ 1 49" table **Alliant** (Bridgeport type) manual mill with **Sony Magnescale DRO**
- ~ 1 14" x 40" **Harrison M300** precision tool room lathe with **Sony Magnescale DRO**
- ~ 1 Tool and die grinder
- ~ 3 **SCM** 7 hp over arm pin routers (one with variable speed drive)
- ~ 3 24" throat **SCM** and **Alliant** bandsaws
- ~ 1 24" throat metal bandsaw
- ~ 1 14" **Rockwell** bandsaw
- ~ 1 **Rockwell** 12" table saw with Acu-Fence system
- ~ 1 **Jet** 12" table saw
- ~ 1 **Hendrick** 12' overarm panel saw
- ~ 2 **DeWalt 790** 12" radial arm saws
- ~ 1 **S&M** 800 watt ultrasonic insertion or staking unit
- ~ 1 9" x 17" travel manual milling machine used for fixture modification

Sewing

- ~ 1 **Brother CNC** programmable sewing machine
- ~ 1 **Juki** walking foot industrial sewing machine
- ~ 1 **PFAFF** extended pillar industrial sewing machine
- ~ 1 **Mercury** walking foot industrial sewing machine

Heat Bending Equipment:

- ~ 1 **Clark Model 2000** (96" wide) two beam, over and under, hot wire, automated plastic bender with optional dual control and tables
- ~ 2 **Clark Model 1250** (48" wide) four beam, over and under, hot wire, automated plastic benders

Support Equipment:

- ~ 1 75 hp **Compair** rotary screw air compressor (primary air compressor)
- ~ 1 25 hp **Hydrovane** rotary vane compressor (backup air)
- ~ 8 **Busch** high efficiency rotary vane vacuum pumps
- ~ 5 **Sterltronic** recirculating water mold temperature control units
- ~ 6 **Apogee** designed digital electronic mold temperature control units
- ~ 3 **Rapid** plastic granulators to reclaim off cuts and plastic scrap
- ~ 1 **Steelman** walk-in gas fired plastic drying oven
- ~ 2 **Grieve** 64 cubic foot annealing ovens
- ~ 1 **Raymond Reach-Fork** forklift
- ~ 1 **Caterpillar** triple boom 3,000 lb fork truck
- ~ 2 Custom 10,000 psi hydraulic control units for mold actuation
- ~ 2 Glass beading cabinets
- ~ 3 Belt sanders (1" to 8" wide)
- ~ 1 48" air actuated press brake
- ~ 1 24" sheet metal press brake

- ~ 1 Kick press
- ~ 4 Hydrogen/oxygen torch systems

Electronic Equipment:

- ~ 1 **Hitachi** 60 MHz dual trace oscilloscope with on-screen digital display
- ~ 1 **Fluke Model 123** portable digital DMM and scope
- ~ 6 **Fluke** DVMs and digital LCR test meters
- ~ 1 **Hewlett Packard** bench DVM
- ~ 1 **Wavetek Model 275** 12mhz Arbitrary waveform generator
- ~ Numerous high and low voltage power supplies

QC Equipment:

- ~ 1 **2004 FARO Titanium** 6 axis articulated arm CMM for measurement and robot tool path generation. This CMM has an 8-foot *diameter* active area.
- ~ 1 **Mitutoyo** CMM
- ~ 1 12" **Mitutoyo** Digital height gage
- ~ > 20 6" **Mitutoyo** Digital calipers (standard issue throughout Apogee)
- ~ > 6 12" **Mitutoyo** Digital calipers (standard issue to some team members)
- ~ 1 24" x 48" ground and polished steel test table
- ~ 48" Vernier calipers
- ~ 12" Dial height gage
- ~ 12" **Starett** Vernier height gage
- ~ 36" Precision stainless layout scale
- ~ Sheet thickness gages
- ~ Screw pitch and pin gage sets
- ~ Spring tension gages
- ~ Radius gage sets
- ~ Durometer gages
- ~ 2 **NCI** Digital weighing and counting scales
- ~ 1 **O'Haus** digital lab scale
- ~ 1 **AVO/Biddle** 0-6 Kv AC and 0-12 Kv DC **Hi-Pot** tester
- ~ 1 Short wave **UV** (254nm) light source and transmissivity meter

Data Processing – Computer Equipment:

- ~ 1 **Hewlett Packard E-800** network server with **RAID** equipped (redundant) hard disks, streaming tape and DVD backup.
- ~ 12 **Pentium IV 2.4Ghz** workstations with 17" flat panel monitors
- ~ 4 **NEC Powermate** flat screen TFT LCD display workstations
- ~ 2 **Toshiba** portable computers
- ~ 1 **Toshiba DP2460** Digital copier with advanced editing features and auto collate
- ~ 1 **HP-55i/55i MX** high throughput network laser printer
- ~ 2 **HP Deskjet 1220C** color printers (for graphics work)
- ~ **APC** uninterruptible power sources on *all* computers and CNC equipment
- ~ **Sony Mavica MVC FD-71** and **91** digital cameras (for use by sales staff while in the field)

- ~ **Sony** 8mm video camera (for use by sales staff)
- ~ **Tandberg 600** ISDN Teleconferencing system

Software:

- ~ **AUTOCAD 14™** Mechanical Desktop CAD software for engineering
- ~ **SolidWorks™** Solid Modeling and mechanical design software
- ~ **KEYCREATOR™** CAD software for engineering
- ~ **AccuTools™** and **SurfCam™** for CAM Programming of all CNC equipment
- ~ **Microsoft** Small Business Server Local Area Network
- ~ **Great Plains Dynamics™** accounting integrated with Micro-Max MRP
- ~ **MicroMax MRP™** production planning and inventory
- ~ **CircuitMaker™** Spice based electronic circuit design and analysis program
- ~ **Opticalc™** Optical design program from OPTIS
- ~ **Designer 10™** for graphics and prototype label generation
- ~ **Adobe Illustrator 9™** graphics program
- ~ **Maximizer™** Contact management program for sales personnel

FACILITIES

Apogee *owns* a modern 30,000+ square foot building designed to suit our specialized needs. We have an additional 30,000 foot air-conditioned building under lease for assembly, storage and to handle logistics. Primary facility specifications include:

- ~ 4,000+ amps of AC power
- ~ A high efficiency, multi-zone ventilation system in the plant
- ~ An assembly, repair, and testing area for electromechanical units that we have produced
- ~ High efficiency, high-output illumination throughout the entire facility
- ~ Sealed and epoxy coated floors
- ~ 4 covered loading docks with load levelers
- ~ 2001 GMC enclosed 24 foot truck

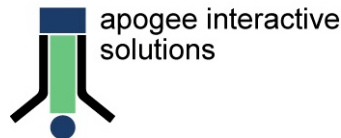
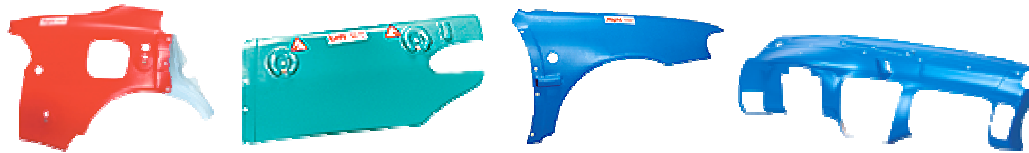
CORPORATE STRATEGY

Apogee is a manufacturing firm with in house design, engineering and development capabilities. Our target customer produces a complex technical product in a growth-oriented market. While we often supply simple formed or machined components, Apogee is most successful when acting as a member of a customer’s development team and then goes on to produce an integrated product.

Apogee also develops and manufactures products for the automotive market through two wholly owned divisions.



HardGuard (www.hardguard.com) products are used in automotive assembly plants worldwide to prevent damage to vehicles during the assembly process. Our protectors keep Honda, GM, Ford, Mercedes, BMW, Chrysler, Toyota, Isuzu, Freightliner, Subaru and Harley Davidson products looking good.



We are a video society. Every AIS workstation makes use of this fact by clearly presenting procedures on a monitor, directly in front of the operator. Integrating AIS software and hardware into a job specific workstation allows you to train and manage your personnel while they perform the job. Team members follow a step-by-step, visual, work process in an ergonomic and efficient workspace. You can expect dramatic improvements in productivity, accountability and profitability while reducing errors.

Programming is easily done through an Excel spreadsheet and all steps appear on a video screen.





Apogee Designs, Ltd.
101 South Kane Street
Baltimore MD 21224
USA

Phone: (410) 633-6336
Fax: (410) 633-3666

Video: Please call to set up your connection

Email: sales@apogeedesigns.com
www.apogeedesigns.com

Manufacturing Solutions, Every Day